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ENVIRONMENTAL MONITORING FERNALD ENVIRONMENTAL MANAGEMENT PROJECT OCTOBER 1993

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FACTSHEET

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FERNALD
Environmental Management Project

WHAT IS ENVIRONMENTAL MONITORING?

The Environmental Monitoring Program plays a key role in planning and executing the Fernald cleanup. Environmental monitoring helps determine where and to what extent uranium and other materials have contaminated the surrounding environment. The program also ensures that any release of materials will be detected as quickly as possible so that corrective actions can be taken. Environmental monitoring is required under many state and federal regulations and guidelines and is used to inform local residents of progress being made at Fernald.

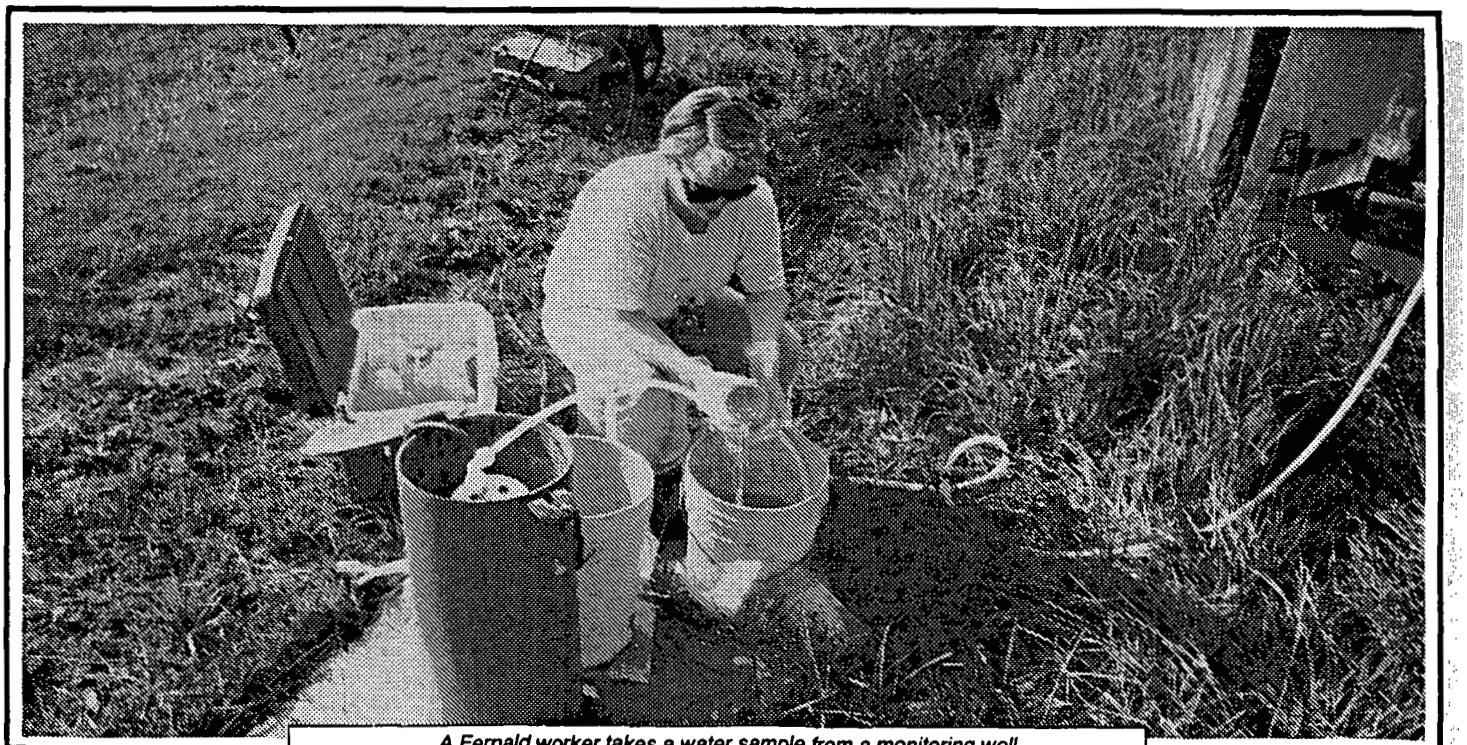
An essential part of the Environmental Monitoring Program is analysis of sampling data to help scientists determine exactly what impacts activities at the site have had on the environment. Once the data is collected and analyzed, several factors must be taken into consideration before accurate conclusions about the nature and extent of contamination can be reached. The local geography and geological history, the classification of rocks and rock formations, and evidence of the water flow are just a few of the factors which affect the movement of contamination through the environment.

WHAT IS MONITORED?

The Environmental Monitoring Program focuses on exposure pathways. A pathway is a route by which radioactive or other hazardous materials could travel between the point of release and the point of delivery to a person. The primary exposure pathways are air and water. Contamination can also reach humans indirectly through food from plants, animals, or fish that have absorbed materials released into the air and water.

Air Pathway

The air pathway includes contaminants that may be carried from Fernald through airborne emissions. Stack and building vent emissions, construction activities, waste handling, and wind erosion are all potential sources of pollutants. The most effective way to monitor the air pathway is to take samples from the soil, grass, and produce near Fernald. Data is collected annually to determine how much progress in reducing emissions is being made at Fernald.



A Fernald worker takes a water sample from a monitoring well.

The first step in monitoring the air pathway is measuring the emission rate of pollutants at the point of release. The emission rate is how slow or fast pollutants are being released. This provides information on how much contamination has been released and how it will behave in the environment. This monitoring is done by air monitoring stations located at various places on the site, at the fenceline, and at several locations in nearby communities. Fernald operates air monitoring stations continuously as part of the Air Monitoring Program.

In addition to the air monitoring stations, Fernald also samples the soil, grass, produce, and milk around the site as part of the Environmental Monitoring Program. Samples are taken to determine the extent of uranium contamination as well as other pollutants at the site. When these samples are analyzed, scientists may be able to determine if the contaminants found are naturally occurring, or whether they are the results of activities at Fernald.

Water Pathway

The water pathway includes releases from Fernald that could carry contaminants into creeks and rivers and into the groundwater supply. Surface water sampling measures the extent of contamination in the Great Miami River and the effects of uncontrolled storm water runoff into Paddy's Run. The Great Miami River and Paddy's Run are sampled weekly at random locations. The samples are analyzed for total amount of uranium or other contaminants.

Fernald controls liquid effluents, including sanitary sewage, storm water runoff from the waste pit area and the former production area, and wastewater from the treatment plant. These effluents are sampled by a flow-proportional sampler, which is a continuously operating device that collects a varying amount of the effluent in proportion to the volume of the effluent flow. The liquid is collected from the sampler every 24 hours and is monitored to determine the amount of total uranium discharged to the Great Miami River.

Fish sampling enables scientists to see whether pollutants are being absorbed by aquatic life. In turn, this could determine how much radioactive material could reach people if they eat the fish from the Great Miami River.

Groundwater is also an important component of the liquid pathway because it is the source of water for homes and farms for nearby residents. Approximately 200 wells are monitored throughout the Fernald area. Sampling of these wells at the Fernald site and in the surrounding area helps provide information about the aquifer. Scientists can determine the extent of any contamination by sampling the aquifer in various locations.

STANDARDS

Standards and guidelines have been established by scientific and government organizations to ensure that employees, nearby residents, and the environment are all protected. The International Commission on Radiological Protection, the Ohio Environmental Protection Agency, and the United States Environmental Protection Agency all have established standards which limit the amount of radiological or chemical contaminants to which the population can be exposed. These standards have been adopted by the Department of Energy for all of its facilities. Fernald follows these standards and guidelines in its daily operations, and must report monitoring results on a regular basis to the Department of Energy, the Ohio Environmental Protection Agency, and the United States Environmental Protection Agency.

Results of the site environmental monitoring are published annually in the Fernald Annual Site Environmental Report. The report presents a summary of the environmental monitoring results and estimates the exposure to public as a result of Fernald activities. It also includes a brief summary of waste management and remediation activities at the site. Copies of the annual reports can be obtained at the Public Environmental Information Center (PEIC) located at 10845 Hamilton-Cleves Highway in Harrison, Ohio.

For more information about this topic or about other Fernald activities and issues, contact the Office of Public Information, DOE Fernald Field Office, at (513) 648-3131.